Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1.-4. (Canceled).

5. (Currently Amended) Method according to Claim ~~1~~20, wherein the probe molecules are immobilized in spatial proximity to the electronic circuits on a countersurface, positioned opposite the circuit surface.

6. (Currently Amended) Method according to Claim ~~1~~20, wherein the probe molecules are immobilized by covalent binding and, in step (d), the analyte molecules bind by affinity to the probe molecules.

7.-10. (Canceled).

11. (Currently Amended) Method according to Claim ~~1~~20, wherein the electrical contact between the nanoparticles and the contact spot is established by electrically conductive n-type chain molecules ~~other than the nanoparticles~~ that are bound to the contact spot.

12. (Original) Method according to Claim 11, wherein the electrically conductive molecules are compounds of the polyene class.

13. (Currently Amended) Method according to Claim ~~1~~20, wherein the electrical contact between the nanoparticles and the contact spot is established by the nanoparticles touching the contact spot.

14. (Previously Presented) Method according to Claim 13, wherein analyte molecules with nanoparticles bound thereto are bound to probe molecules immobilized on an insulating surface opposite the circuit surface, and the electrical contact of the nanoparticles with the contact spot is established by moving the insulating surface and the bound nanoparticles towards the circuit surface so that the nanoparticles touch the contact spot.

15. (Previously Presented) Method according to Claim 13, wherein analyte molecules having magnetizable nanoparticles bound thereto are bound to probe molecules immobilized on a surface opposite the circuit surface; the linkages between the nanoparticles and the analyte molecules or the linkages between the analyte molecules and the probe molecules are broken; and the electrical contact of the now no longer immobilized nanoparticles with the contact spot of the circuit surface is established by an external magnetic field acting on the nanoparticles.

16. (Previously Presented) Method according to Claim 13, wherein analyte molecules having magnetizable nanoparticles bound thereto are bound to probe molecules immobilized on the contact spot of the circuit surface, and electrical contact of the nanoparticles with the contact spot is established by the effect of an external magnetic field or by mechanical pressure of a countersurface on the nanoparticles.

17. (Currently Amended) Method according to Claim 13, wherein in each circuit surface, one of the ~~circuit surface~~ contact spot or the surface of the nanoparticles is ~~loaded~~ covered with electrically conductive protrusions.

18. (Currently Amended) Method according to Claim ~~1~~20, wherein DNA oligomers are used as probe molecules, the analyte molecules are amplified prior to step (d) by polymerase chain reactions (PCR) using a biotinylated primer, and the

nanoparticles are coated with streptavidin, enabling binding of the nanoparticles to biotin groups of the analyte molecules by a biotin-streptavidin binding pair.

19. (Previously Presented) Method according to Claim 18, wherein the analyte molecules are amplified prior to step (d) by polymerase chain reactions (PCR) using a primer, and the nanoparticles are coated with a substance that binds to molecules in the primer, enabling binding of the nanoparticles to the analyte molecules so that instead of the biotin-streptavidin binding pair another binding pair is used.

20. (New) A method for measuring the binding of analyte molecules to probe molecules, the method comprising the following steps:

(a) providing a circuit surface having a spatially separated array of circuits, each circuit having an electronic detector circuit, a metal counterelectrode and a contact spot;

(b) immobilizing a field of probe molecules in spatial proximity to each of the circuits wherein the probe molecules are the same for each circuit, but differ from circuit to circuit;

(c) binding nanoparticles having a metal surface that forms an electrochemical series with the metal counterelectrode to the analyte molecules with adhesion molecules to form analyte structures;

(d) placing the analyte structures in the vicinity of the probe molecules in order to facilitate binding of the analyte molecules to the probe molecules;

(e) introducing an electrolyte adjacent the circuit surface so that in each circuit where nanoparticles are bound to proximal probe molecules via analyte molecules, the counterelectrode and the metal surfaces of the nanoparticles form electrodes of a galvanic cell;

(f) in each circuit where nanoparticles are bound to the proximal probe molecules, physically moving the nanoparticles to establish an electrical contact between the metal surfaces on the nanoparticles and the contact spot; and

(g) determining in which circuits galvanic cells have formed by detecting one of a galvanic cell current and a galvanic cell voltage between the counterelectrode and the contact spot with the electronic detector circuit, so that the spatial pattern of circuits in which galvanic cells have formed measures the binding of the analyte molecules to the probe molecules.